

## ABSTRACT

Systems and methods for deriving a cardiac cycle signal by selecting images of a portion of a cardiovascular system include receiving a plurality of images from a scanner that have been recorded over a period of time. The images represent one or more locations along the extent of the cardiovascular system. The images are then selected based on common criteria determined from the plurality of images and without reference to an external signal. The common criteria comprises changes in the size of a cross section of the aorta, changes in the volume of the heart, changes in the area of a cross section of the heart. In addition, the criteria can include the mean pixel difference between adjacent images.

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